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VK 200 Tablet Hardness Tester Operator's Manual

P/N 70-9015
November 2010
Revision H

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Chapter 1 Safety Practices and Hazards

The VK 200 has been carefully designed so that when used properly you have an accurate, fast, flexible, and safe instrument.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Operation of a VK 200 involves the use of solid dosage forms. Unskilled, improper, or careless use of this instrument can create shock hazards, fire hazards, or other hazards which can cause death, serious injury to personnel, or severe damage to equipment and property.

Information on safety practices is provided with your instrument and operation manuals. Before using your instrument or accessories, you must thoroughly read these safety practices.

Observe all relevant safety practices at all times.

Electrical Hazards

The VK 200 contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

Panels or covers that are retained by fasteners which require the use of a tool for removal may be opened only by Varian-trained, Varian-qualified, or Varian-authorized service engineers. Consult the manuals or product labels supplied with the VK 200 to determine which parts are operator-accessible.

Application of the wrong supply voltage, connection of the instrument to an incorrectly wired supply outlet, or lack of proper electrical grounding can create a fire hazard or a potentially serious shock hazard and could seriously damage the instrument and any attached ancillary equipment.

Always use a three-wire outlet with ground connection which is adequately rated for the load. The installation must comply with local, state, and federal safety regulations.

Do not connect the instrument to the main power supply until you have made sure that the operating voltage is correctly set for the main power supply in the specific outlet in your laboratory to which the equipment will be connected.

Other

Other specific warnings and cautions appear in the manuals where appropriate and detail the specific hazard, describe how to avoid it, and specify the possible consequences of not heeding the warning or caution.

Warning

A 'Warning' message appears in the manual when failure to observe instructions or precautions could result in death or injury. Symbols depicting the nature of the specific hazard are also placed alongside warnings.

These symbols may be used on warning labels attached to the instrument. When you see one of these symbols you must refer to the relevant operation or service manual for the correct procedure referred to by that warning label.

The meaning of the symbols that appear alongside warnings in this manual are as follows:

Electrical shock

Pinch point

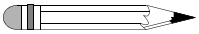
Caution
Refer to accompanying documents

Read all warnings and cautions carefully and observe them at all times.

Caution

A 'Caution' message appears in the manual when failure to observe instructions could result in damage to equipment (Varian supplied and / or other associated equipment).

A 'Note' appears in the manual to give advice or information.



Information symbols

I	Switches main power on
0	Switches main power off
	Indicates single-phase alternating current
	Indicates the product complies with the requirements of one or more European Union (EU) directives
	Indicates specific equipment meets consensus-based standards of safety to provide assurance, required by OSHA, that these products are safe for use in the workplace for North America
	Indicates that this product must not be disposed of as unsorted municipal waste (see "WEEE Directive" on page 10)

General

CE Compliant Products

The VK 200 has been designed to comply with the requirements of the Electro-magnetic Compatibility (EMC) Directive and the Low Voltage Directive (LVD) of the EU.

Varian, Inc. has confirmed that each product complies with the relevant directives by testing a prototype against the prescribed European Norm (EN) standards.

Proof that a product complies with the directives is indicated by:

- the CE marking appearing on the rear of the product.
- the documentation package that accompanies the product containing a copy of the declaration of conformity. This declaration is the legal declaration by Varian, Inc. that the product complies with the directives and also shows the EN standards to which the product was tested to demonstrate compliance. The declaration of conformity is signed by the representative of the manufacturing plant.

cTUVus - U.S. and Canadian Product Approvals

The VK 200 has been designed to comply with North American safety requirements.

This product has been tested and certified for the North American market by TUV Rheinland of North America, Inc. The TUVus mark signifies that this product has been tested to U.S. standards and certified for the U.S. market. The cTUV mark signifies that this product has been tested to Canadian standards and certified for the Canadian market. When the two marks are coupled, the cTUVus mark signifies that this product has been tested to standards and certified for both markets.

WEEE Directive

All Varian products that are subject to the WEEE directive shipped after August 13, 2005 are compliant with the WEEE marking requirements. Such products are marked with the "crossed out wheelie bin" WEEE symbol shown on page 8 in accordance with European Standard EN 50419.

This symbol on the product or on its packaging indicates that this product must not be disposed of as unsorted municipal waste. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

For more information on collection, reuse, and recycling systems, please contact your local/regional waste administration, your local distributor, or Varian, Inc.

Chapter 2 Introduction

The VK 200 Tablet Hardness Tester has been designed for the testing of tablets in a variety of shapes and sizes with the highest possible levels of precision and accuracy. Up to 250 tablets may be tested per run. The optional Report Center Printer gives you complete printouts of test results, with both raw values and batch statistics. The VK 200 is designed with the smallest possible footprint to conserve valuable bench space.

How Your VK 200 Works

The VK 200 Tablet Hardness Tester uses an advanced strain gauge design for its hardness measurements. The instrument is controlled by a built-in microprocessor. The sensing jaw is connected to the strain gauge. As the moving jaw presses the tablet against it, the force is continuously measured and recorded until the initial fracture is detected and confirmed. Results for each tablet are shown on the front panel display. A front panel toggle switch allows you to view results in either kiloponds or Strong-Cobb units. Optionally, your VK 200 can be equipped to read in Newtons. In testers equipped with the optional Report Center Printer, raw results are saved in buffer memory. When the Initialize/Print / Calibrate toggle switch is pressed to the *INITIALIZE/PRINT* position,

statistics for the run are calculated and a full report is printed. After printing, the data buffer is cleared and the unit is ready to begin a new series of measurements.

Warning

The VK 200 contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

FIGURE 1. VK 200 Tablet Hardness Tester

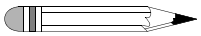
Caution

Panels or covers that are retained by fasteners which require the use of a tool for removal may be opened only by Varian-trained, Varian-qualified, or Varian-authorized service engineers.

Conventions Used in this Manual

- Items you are asked to press are in bold. For example, "press **TEST** on the VK 200 front panel".
- Toggle switches you are asked to press appear like this: "Press the Initialize/Print / Calibrate toggle switch to the *INITIALIZE/PRINT* position".

Note



Remember to return the warranty card supplied with this manual. Completing and returning the card ensures your right to protection under the terms and conditions of your warranty. It also enables us to better assist you in the event of any problems. Additionally, it guarantees you will be informed of any issues that arise concerning your equipment, such as upgrades, retrofits, or regulatory changes.

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Chapter 3 Installation and Setup

Unpacking Your VK 200

Step 1. Open each carton and check the contents for damage which may have occurred during shipping. Shipping damage rarely occurs, but if it does contact both the carrier who delivered the instruments and the Dissolution Systems Service Department. Though claims for damage should be filed with the carrier, we can help you file a claim.

Step 2. Carefully remove the VK 200 and accessories from the shipping carton. Hold the VK 200 firmly to prevent it from dropping.

Step 3. Place the unit on a clear, dry, level section of the bench top or table. At least four inches (10 cm) of open space should be allowed at the rear and on both sides of the instrument.

Warning

The electrical connection at the back of the VK 200 Tablet Hardness Tester is the primary disconnect for the instrument. The tester should be positioned to allow accessibility to the power cord for easy disconnection.

Connecting the Report Center Printer

Warning

Before plugging the Report Center Printer into any power outlet, ensure the printer is properly configured for the voltage provided. Check the input voltage rating on the AC power adapter to confirm the voltage requirement.

The electrical connection at the back of the printer is the primary disconnect for the device.

If you have the optional Report Center Printer, complete the following steps to connect it to your VK 200:

Step 1. Remove the printer from the shipping carton.

Step 2. Place it on a clean, dry area of your benchtop to the right of your VK 200.

Step 3. Connect the 25-pin printer cable between the printer rear panel and the port on the VK 200 right side panel.

Step 4. Plug the connector of the AC power adapter into the jack on the printer rear panel. Plug the other end into the electrical outlet.

Step 5. Toggle the printer online by pressing the printer toggle switch to the *OnLine / Off Line* position. The Ready LED illuminates. If it does not, ensure the printer is securely plugged in and there is power at the outlet. If the device still fails to respond, see "Troubleshooting" on page 36 or contact the Dissolution Systems Service Department.

Electrical Connections

Warning

Before plugging the VK 200 into any power outlet, ensure the instrument is properly configured for the voltage provided. Check the serial number tag on the rear panel of the instrument to confirm the voltage requirement.

The electrical connection at the back of the VK 200 is the primary disconnect for the instrument.

Step 1. Ensure the VK 200 is turned off.

Step 2. Connect the power cord between the receptacle on the rear panel of the VK 200 and an electrical outlet of the appropriate voltage.

Installing Accessories

The VK 200 Tablet Hardness Tester accessory kit includes the calibration weight hanger, tablet fragment safety shield, adjustment tool, particle catch tray and fragment brush. See "Calibration" on page 25 for instructions on the use of the calibration weight hanger. See "Cleaning the Jaws" on page 28 for instructions on removing the jaw plate. Complete the following steps to install the particle catch tray:

Step 1. Attach the particle catch tray to the back of the VK 200 by aligning the three screws on the tray to the larger part of the slots in the VK 200 back panel.

Step 2. Slide the tray down.

Step 3. Secure the screws in the smaller area of the slots.

Initial Power Up

The power switch is located on the power entry module on the VK 200 rear panel. Turn on the instrument. After the unit is turned on, the measuring jaws move to their maximum open position and the front panel displays a series of dashes. You are now ready to begin operation.

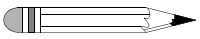
Caution

Press TEST only when a tablet is in the proper position or damage may occur to the unit.

Chapter 4 Operation

Selection of Measurement Units

The VK 200 Tablet Hardness Tester can display hardness values in either kiloponds or Strong-Cobb units. To select the desired unit, place the front panel mode switch in either the *kp* (for kiloponds) or *SC* (for Strong-Cobb units) position. If you have the optional display of hardness values in Newtons, place the front panel mode switch in the *N* position.



Note

Selection of the measurement unit must be done prior to testing a group of tablets.

Testing Tablets

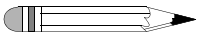
Thickness and Diameter Testing with Optional Thickness Gauge

If your VK 200 is equipped with the optional digital thickness gauge, you can measure and record the thickness of each tablet before its hardness value is determined. If your VK 200 has been programmed with the optional diameter measurement capabilities, you can also measure and record the diameter of each tablet before its hardness value is determined.

Step 1. Ensure the thickness gauge is turned on. When on, the LCD illuminates. If not, press **ON/OFF** on the front of the gauge. Select measurement in inches or millimeters by pressing **in/mm**.

Step 2. Press down the lever on top of the gauge. The plunger on the bottom rises. Place your tablet under the plunger and gently release the lever. The plunger is now in contact with the tablet.

Note



It is not necessary to zero the gauge before placing the tablet on the tester since the tester calculates the difference between the starting and ending measurement.

Step 3. The thickness value, in inches or millimeters, displays on the thickness gauge LCD and VK 200 LED. If your unit is equipped with a Report Center Printer, ensure the printer is turned on and the Ready LED is illuminated. If not, see "Toggling Your Printer Online" on page 32. The thickness value prints as it is determined. Press down the lever on top of the thickness gauge again to lift the plunger.

Step 4. Remove the tablet and release the lever.

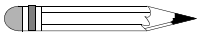
Step 5. If your VK 200 is equipped with the optional diameter measuring capabilities, repeat steps 2 - 4 placing the tablet on its side under the gauge to determine its diameter. The diameter value prints as it is determined.

Step 6. Determine the hardness value of the tablet after completing the thickness and diameter tests by performing steps 2 - 4 under "Hardness Testing" on page 22.

Step 7. Repeat steps 2 - 6 for all remaining tablets. If it is not necessary to check thickness and diameter values for every tablet and your unit has a Report Center Printer installed, the thickness and diameter values for skipped tablets are omitted on the printout.

Step 8. To reset the jaws to their fully open position and print a statistical summary of all parameters, press the Initialize/Print / Calibrate toggle switch to the *INITIALIZE/PRINT* position.

Note



The Initialize/Print / Calibrate toggle switch is a spring-loaded rocker switch. The rocker returns to the center position after you release your finger. Toggle it to either position as required by pressing it until you hear a click, then release.

Do not press the Initialize/Print / Calibrate toggle switch to the *INITIALIZE/PRINT* position until the last tablet in the batch has been tested. The memory buffer clears after the report prints and all data from the test batch is lost.

Hardness Testing

Warning

Eye protection is required when operating the VK 200. Wear approved safety glasses.

Warning

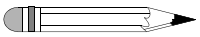
There is a pinch hazard between the sensing jaw and the power jaw. Exercise caution.

Step 1. If your unit is equipped with a Report Center Printer, ensure the printer is turned on and the Ready LED is illuminated. If not, see "Toggling Your Printer Online" on page 32.

Step 2. Place the tablet against the sensing jaw. Center the tablet against the face plate of the sensing jaw.

Step 3. Place the tablet fragment safety shield over the sensing jaw and power jaw to reduce exposure to projected fragments of the tablet as it is being crushed. Be sure to align the groove over the sensing jaw.

Step 4. Press **TEST**. The power jaw begins to close. At the moment the tablet fractures, the moving jaw stops and retracts slightly and the hardness value displays on the LED. If your tester is equipped with a Report Center Printer, the hardness value prints as it is determined.



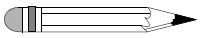
Note

The jaws size the tablet automatically. After the first tablet has been tested, the jaws open just enough to easily insert subsequent tablets.

Step 5. Repeat steps 2 - 4 for all subsequent tablets.

Step 6. To reset the jaws to their fully open position and print a statistical summary of all parameters, press the Initialize/Print / Calibrate toggle switch to the *INITIALIZE/PRINT* position.

Note



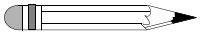
The Initialize/Print / Calibrate toggle switch is a spring-loaded rocker switch. The rocker returns to the center position after you release your finger. Toggle it to either position as required by pressing it until you hear a click, then release.

Do not press the Initialize/Print / Calibrate toggle switch to the *INITIALIZE/PRINT* position until the last tablet in the batch has been tested. The memory buffer clears after the report prints and all data from the test batch is lost.

Optional Report Center Printer

Press the Initialize/Print / Calibrate toggle switch to the *INITIALIZE/PRINT* position in order to print a complete statistical summary of all tablet results. The data buffer clears and the jaws re-initialize to their fully open position. The VK 200 Tablet Hardness Tester is now ready to test the next group of tablets.

Note



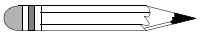
The Initialize/Print / Calibrate toggle switch is a spring-loaded rocker switch. The rocker returns to the center position after you release your finger. Toggle it to either position as required by pressing it until you hear a click, then release.

Do not press the Initialize/Print / Calibrate toggle switch to the *INITIALIZE/PRINT* position until the last tablet in the batch has been tested. The memory buffer clears after the report prints and all data from the test batch is lost.

Enabling and Disabling the Report Center Printer

To toggle between enabling and disabling the printer, press and hold the Initialize/Print / Calibrate toggle switch in the *INITIALIZE/PRINT* position and then press **TEST**. Release both buttons simultaneously.

Note



The Initialize/Print / Calibrate toggle switch is a spring-loaded rocker switch. The rocker returns to the center position after you release your finger. Toggle it to either position as required by pressing it until you hear a click, then release.

Chapter 5 Maintenance and Troubleshooting

Calibration

The strain gauge mechanism should be calibrated after initial installation and periodically thereafter to assure that the VK 200 operates with the accuracy and precision it was designed to deliver. The interval between calibrations depends largely on the instrument workload and the criticality of the test. We recommend a calibration be performed every six months.

Warning

If using a weight greater than 20 kg, a calibration fixture must be bolted to the table prior to using the VK 200.

Weights are suspended on the calibration weight hanger. Be sure to keep your feet out from underneath the suspended weights.

To calibrate the unit, perform the following steps:

Step 1. Ensure the table on which the VK 200 sits during the calibration is level.

Step 2. Turn on the VK 200. Wait five minutes for the electronics to stabilize.

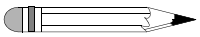
Step 3. Place the unit on its left side on a flat surface. Hold it securely to keep it from falling.

Step 4. If you have the optional calibration fixture, secure the hardness tester to the fixture with the two locking screws by winding them through the fixture and into the bottom of the tester.

Step 5. Ensure the threaded end of the calibration weight hanger supplied in the accessory kit is straight. If it is not straight, the screw must be replaced. Contact the Dissolution Systems service department.

Step 6. Thread the calibration weight hanger into the sensing jaw for approximately ten turns or until it stops.

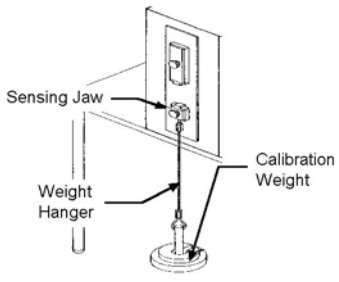
Step 7. Ensure the weight hanger is tight and does not rotate. See Figure 2, "Attaching the Calibration Weight Hanger to the Sensing Jaw," below.



Note

Prior to threading the calibration weight hanger into the sensing jaw, ensure the screw is straight. If it is not straight, the screw must be replaced. Contact the Dissolution Systems service department.

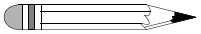
FIGURE 2. Attaching the Calibration Weight Hanger to the Sensing Jaw



Step 8. Ensure the weight hanger is hanging free and is stable.

Step 9. Place the unit in calibration mode by toggling the Initialize/Print / Calibrate toggle switch to the *CALIBRATE* position. After a few seconds, the VK 200 displays 0.00. Note that the last digit on the front panel may flicker slightly. This is normal and is due to the high sensitivity of the instrument.

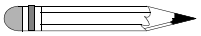
Note



The Initialize/Print / Calibrate toggle switch is a spring-loaded rocker switch. The rocker returns to the center position after you release your finger. Toggle it to either position as required by pressing it until you hear a click, then release.

Step 10. Select a 10 kg calibration weight and carefully place it on the weight hanger. The force displayed should match the weight used.

Note



Use only metric weights with a tolerance of NIST class 6 or better for calibration.

Step 11. If the weight applied does not match the force indicated, adjust the calibration trim pot on the underside of the unit. Using the trim pot tool supplied in the accessory kit, turn the calibration trim pot located on the bottom left corner of the VK 200 until the value displayed matches exactly the weight applied.

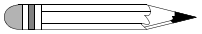
Step 12. After the trim pot has been adjusted, remove the weight and wait for the display to return to 0.00.

Step 13. Press the Initialize/Print / Calibrate toggle switch to the *INITIALIZE/ PRINT* position and release to reset the VK 200.

Step 14. Press the Initialize/Print / Calibrate toggle switch to the *CALIBRATE* position and release.

Step 15. Place the 10 kg weight back on the hanger and check the reading.

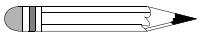
Step 16. Repeat steps 7 - 15 until the 10 kg weight reads 10.00 and the LED display returns to exactly 0.00 after removing the calibration weight.



Note

If the weight does not read within designated tolerances after several attempts, contact the Dissolution Systems Service Department.

Step 17. If necessary, verify the operating range of the VK 200 with additional weights.



Note

Do not reset the machine to operational mode if you are continuing to read additional weights.

Step 18. Place the next weight on the weight hanger. The displayed value should be within ± 0.1 kg or ± 1.0% of the actual weight applied (whichever is greater).

Step 19. After the last calibration weight has been read, press the Initialize/Print / Calibrate toggle switch to the *CALIBRATE* position to exit calibration mode.

Step 20. Remove the weight from the hanger and unscrew the hanger from the sensing jaw.

Step 21. Unfasten the calibration fixture, if applicable, and carefully place the unit in the upright position on the benchtop.

Cleaning the Jaws

Other than calibration, the VK 200 Tablet Hardness Tester requires little routine maintenance. However, the jaws should be cleaned regularly to remove powder and tablet fragments which could affect accuracy.

Step 1. Remove the thumbscrews and the washers which secure each jaw. *Do not lose the washers.*

Step 2. Lift both jaws off of the instrument.

Step 3. Carefully clean the jaw plate with a suitable solution.

Step 4. Use the brush supplied in the accessory kit to clean underneath the jaws.

Step 5. Ensure the jaw plate is dry. Replace and secure each jaw with the washers and thumbscrews.

Acrylic Care

1. Be sure to rinse acrylic item(s) thoroughly with deionized water immediately after each use and dry thoroughly with a soft towel or cloth.

2. Do not clean with abrasive cleansers or cloths. Use deionized water whenever possible. If you must use a cleanser or solvent, be sure that it is as mild as possible, non-abrasive, and fully compatible with PETG and acrylic before use. If in doubt, call the service department for advice before proceeding.

3. Do not use ammonia, window-cleaning sprays, kitchen scouring compounds, or solvents such as acetone, gasoline, benzene, alcohol, carbon tetrachloride, or lacquer thinner. These can scratch the material's surface and / or weaken it causing small surface cracks called "crazing".

4. Our recommendations include but are not limited to the following:

- Hot water:< 150 °F
- Vinegar (5% Glacial Acetic Acid)
- Ethyl alcohol: maximum 10%
- Isopropyl alcohol: maximum 25%

Report Center Impact Printer

The following is helpful information for using your impact printer.

Installing the Cartridge Ribbon

If the printer is used infrequently, the print impression sometimes becomes weak because the ribbon dries out. If the printed material is difficult to read and you suspect this is the cause of the problem, advance to a new section of the ribbon by pressing the printer toggle switch to the *Paper feed* position. If the printing is still faint, replace the cartridge.

To install the cartridge:

Step 1. Toggle the printer off line by pressing the printer toggle switch to the *OnLine / Off Line* position. When the printer is off line, the Ready LED does not illuminate.

Step 2. Four small grooves are embossed on the printer cover. Gently push on these grooves to tilt the cover. When the printer cover is tilted up, you can lift it off completely.

Step 3. Push down on the right side of the ribbon cartridge (marked PUSH) and remove the old cartridge.

Step 4. Install the new cartridge. If there is already paper in the printer, hold the cartridge between your thumb and index finger, slide it over the paper and into the printer compartment. Ensure the paper is between the ribbon cartridge and the ink ribbon. Ensure the ribbon cartridge is inserted firmly to prevent weak or irregular printing. The cartridge must be properly seated and aligned for the best printing.

Step 5. Turn the cartridge knob (marked by an arrow) clockwise to stretch the ribbon taut.

Step 6. Replace the cover.

Step 7. Toggle the printer online by pressing the printer toggle switch to the *OnLine / Off Line* position. The Ready LED illuminates.

Step 8. Replace the paper if necessary.

If you get ribbon ink on the printer's plastic cover, remove it immediately. Once dried, it is difficult to remove.

Replacing the Paper Roll

Step 1. Toggle the printer off line by pressing the printer toggle switch to the *OnLine / Off Line* position. When the printer is off line, the Ready LED does not illuminate.

Step 2. Grasp the paper roll cover firmly by the grooves on the side and the front edge. Pull outward to remove the cover.

Step 3. Press the printer toggle switch to *Paper feed* to advance the paper approximately one inch beyond the paper cutter.

Step 4. Using scissors, cut the paper feeding to the printer and remove the paper roll.

Step 5. Pull the remaining paper through the printer mechanism. *Pull the paper from the front (paper cutter side)*. Pulling the paper out of the back of the printer will damage the print mechanism.

Step 6. Unroll several inches of paper on the new roll.

Step 7. If it is jagged, cut a straight edge on the paper roll to facilitate the entry of the paper into the printer.

Step 8. Slide the paper through the slot connecting the paper compartment and the printer compartment. You can slide it in approximately 1/4 inch before it stops.

Step 9. While holding the paper in place, press the printer toggle switch to the *Paper feed* position and hold until approximately one inch of paper has emerged from the top of the printer.

Caution

Ensure the roll of paper feeds squarely. If it does not, the paper can jam and possibly damage the printer mechanism.

Step 10. Release the printer toggle switch.

Step 11. Turn the paper roll to take up any slack in the paper feeding to the printer.

Step 12. Place the paper roll into the paper compartment.

Step 13. Replace the paper roll cover. If the cover is difficult to remove or replace, the left and right edges can be trimmed or shaved with a utility knife allowing the cover to slide easier.

Step 14. Toggle the printer online by pressing the printer toggle switch to the *OnLine / Off Line* position. The Ready LED illuminates.

Toggling Your Printer Online

Complete these steps to toggle your printer online:

Step 1. Toggle the printer online by pressing the printer toggle switch to the *OnLine / Off Line* position.

Step 2. Release the switch and it returns to the center position. The Ready LED illuminates and a READY message prints if the PRINT READY command has not been turned off. See "Printer Configuration" on page 33 for instructions on turning on and off the PRINT READY command. When you first turn on the instrument, it prints a READY message to assure you that the built-in microprocessor is operating properly.

When you turn off the printer, wait at least three seconds before turning it on again.

Printer Self Test

You can test the print head and ribbon only *after* inserting paper. Do not attempt to print without paper. Follow these steps to perform a printer self test:

Step 1. Unplug the AC power adapter from the electrical outlet.

Step 2. Press and hold the printer toggle switch in the *Paper feed* position.

Step 3. Plug the AC power adapter into the electrical outlet.

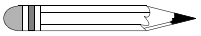
Step 4. Hold the printer toggle switch until printing begins. The printer prints a list of the current configuration settings and performs a continuous print test.

Step 5. Press the printer toggle switch to the *OnLine / Off Line* position to stop the printing operation.

Step 6. The printer is ready to resume normal operation.

Printer Configuration

Note



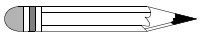
The printer configuration is set by the factory. This procedure should be performed only if the printer displays erroneous characters. Contact the Dissolution Systems Service Department for assistance, if necessary.

Step 1. Unplug the AC power adapter from the electrical outlet.

Step 2. Press and hold the printer toggle switch in the *OnLine / Off Line* position while plugging the AC power adapter into the electrical outlet. Hold the printer toggle switch in the *OnLine / Off Line* position for six seconds after the AC power adapter is replaced, then release the switch.

Step 3. The printer should print: *** SETUP MENU *** and CONFIGURE... [NEXT/OK]. If this message does not print, repeat steps 1 and 2.

Step 4. The printer toggle switch is used to complete the configuration. Pressing the left side of the printer toggle switch selects NEXT to advance to the next menu item. Pressing the right side of the printer toggle switch selects OK to accept what is stated on this line of the menu item. Each time the switch is pressed, another part of the menu prints. Allow the printer to finish printing before pressing the switch again. See the table of commands below.



Note

The printout is easier to read if the printer cover is removed.

*** SETUP MENU***		
CONFIGURE	[NEXT/OK]	Press NEXT to avoid configuration
CUSTOM	[NEXT/OK]	Press OK to enter custom mode
CUSTOM MENU		
PRINT CUSTOM SETUP	[NEXT/OK]	Press NEXT
AUTO SEQ = NO	[NEXT/OK]	Press OK
ZERO = Ø	[NEXT/OK]	Press OK
POUND SIGN = #	[NEXT/OK]	Press OK
_(UNDERSCORE)	[NEXT/OK]	Press OK
ONLINE/OFFLINE = YES	[NEXT/OK]	Press OK
EXT CH SET = NO	[NEXT/OK]	Press OK
PRINT READY = YES	[NEXT/OK]	Press NEXT
PRINT READY = NO	[NEXT/OK]	Press OK
READY...		

Your printer is now configured correctly.

Thickness Gauge Battery Replacement

The Tablet Thickness Gauge is powered by a long-life lithium battery, similar to the type used in many popular watches and cameras. These batteries are available from most retail photo suppliers and many pharmacies (Eveready #357). The battery is also available from the Dissolution Systems Service Department.

To replace the battery:

Step 1. Insert a screwdriver into the slot on the battery holder. Turn the holder one quarter turn counterclockwise as indicated by the arrows. The battery holder pops out of the indicator body.

Step 2. Remove the spent battery from the holder and replace with a new one, observing proper polarity.

Step 3. Insert the holder into the indicator and turn until it locks in place. You are now ready to begin operation.

Fuse Replacement

Warning

The VK 200 contains electrical circuits, devices, and components operating at dangerous voltages. Contact with these circuits, devices, and components can cause death, serious injury, or painful electric shock.

Panels or covers that are retained by fasteners which require the use of a tool for removal may be opened only by Varian-trained, Varian-qualified, or Varian-authorized service engineers.

Follow these steps to replace the fuse:

Step 1. Before checking or attempting to replace a fuse, unplug the VK 200.

Step 2. Press the release tab on the fuse holder located in the power entry module with the blade of a small screwdriver or equivalent.

Step 3. Upon release, slide the holder out of the power entry module.

Step 4. Remove the old fuse and insert the new fuse.

Step 5. Slide the holder back into the power entry module and push until it locks into place.

Step 6. Replace the power cord.

Warning

Never replace a fuse with one of a higher amperage rating. Doing so may compromise the safety margin and could result in damage to the instrument or personal injury.

Troubleshooting

The Dissolution Systems Service Department can assist you if you experience problems or have questions concerning your VK 200. Many problems can be traced to simple sources and are easily solved.

Following is a troubleshooting guide which may help you. The Dissolution Systems Service Department can be reached at 800.229.1108 (inside the US) or 919.677.1108 (outside the US). Optionally, you can send a fax to 919.677.1138. You can also e-mail the Dissolution Systems Service Department at dissolution.service@varianinc.com.

Problem	Possible Cause	Suggested Solution
The LED on the front panel display screen does not illuminate and the jaws do not move when TEST is pressed.	There is no power at the outlet.	Ensure the outlet has power going to it.
	The unit is not plugged in.	Ensure the unit is securely connected to an electrical outlet.
	The fuse is blown (open).	Replace the fuse. See "Fuse Replacement" on page 35.
Hardness values are higher or lower than expected.	The unit is out of calibration.	Calibrate the unit. See "Calibration" on page 25.
	The product tested is out of specification.	Check the manufacturing process of the tablet.
Hardness readings tend to be erratic or jaws do not size tablet properly.	There is debris buildup under the jaws.	Clean the jaws. See "Cleaning the Jaws" on page 28.
	The strain beam is damaged or defective.	Contact the Dissolution Systems Service Department.
	The jaw plates are not optimal for tablet shape.	Contact the Dissolution Systems Service Department for optional jaw plates.
The optional Report Center Printer does not function.	The printer is disabled.	Enable the printer. See "Enabling and Disabling the Report Center Printer" on page 24.
	There is no power at the outlet.	Ensure the outlet has power going to it.
	The printer is not plugged in.	Ensure printer is securely connected to an electrical outlet.
	The printer is off line.	Toggle the printer toggle switch online. See "Toggling Your Printer Online" on page 32.

Problem	Possible Cause	Suggested Solution
Thickness readings are not recorded.	The thickness gauge battery is weak or dead.	Replace the battery. See "Thickness Gauge Battery Replacement" on page 35.
	The thickness gauge is not powered up.	Check for the LCD display on the front of the gauge. If not visible, press **ON/OFF**.
	Tablets are being removed from the thickness gauge too quickly.	Do not remove tablets until the thickness value displays on the thickness gauge LCD and VK 200 LED.

Chapter 6 Service and Warranty

The warranty is provided by Varian, Inc. or one of its authorized representatives.

Service and Warranty Information

Varian products carry a one-year warranty on parts and labor. The Dissolution Systems Service Department (or one of its representatives) will, at its option, either repair or replace any mechanical and electrical components in your instrument which prove to be defective. During the first year of warranty coverage, there is no charge for the labor to repair your unit. The Dissolution Systems Service Department (or one of its representatives) will determine the best site to repair the unit, either onsite or returned to Varian, Inc. Any onsite warranty services are provided only at the initial installation point. Installation and onsite warranty services are available only in Dissolution Systems service travel areas.

Exclusions and Limitations

Excluded from this warranty are expendable or consumable items such as, but not limited to, paddles, baskets, vessels, and acrylic water baths. Also excluded are defects from improper or inadequate maintenance by the customer, user-induced chemical action or contamination, unauthorized modification or misuse, and improper site preparation and maintenance.

Operation of software is not warranted to be uninterrupted or error-free.

Obtaining Warranty Service

To obtain warranty service in the United States, contact the Dissolution Systems Service Department at 800.229.1108 to obtain authorization to return units for repair. At the option of the customer, onsite warranty service is available, but travel charges may be incurred. The customer should prepay all shipping charges for products returned to the Dissolution Systems Service Department (unless otherwise authorized), and Varian, Inc. will pay all charges for return to the customer.

Warranty Limitations

Varian, Inc. makes no other warranty, either express or implied, with respect to this product. Specifically disclaimed are any implied warranties of merchantability and fitness for a particular use. In no event will Varian, Inc. be liable for any indirect, incidental, or consequential damages arising from the use of this product. This warranty gives you specific legal rights which may vary from state to state or province to province, so you may have other rights and some of these exclusions may not apply to you.

Exclusive Remedies

The remedies provided herein are the customer's sole and exclusive remedies. In no event shall Varian, Inc. or its representatives be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory. Some states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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The most useful thing about this book is:

This manual would be more helpful if:

My general impressions of this book are:

May we contact you regarding your comments? ____ YES ____ NO (If yes, please write your name, address, and telephone number here.)

Please return this form via mail to: Technical Writing / Dissolution Systems, Varian, Inc., 13000 Weston Parkway, Cary, North Carolina 27513-2250 USA. Optionally, you can return this form via fax at 1.919.677.1550. Always, feel free to telephone us to discuss your comments at 919.677.1108.